

Response to Comments
Combined Heat and Power General Permits and General Operating Permits for Combustion Turbines

Comment Number /Section	Comments	NJDEP Response
1. General Comments	<p>Princeton University: Princeton University supports the Department’s efforts to develop general permits and general operating permits (GPs and GOPs) to promote Combine Heat and Power (CHP) in the State. (Robert Ortego, P.E., Princeton University)</p>	<p>The Department thanks the commenters for these supporting statements.</p>
2. General Comments	<p>Solar Turbines: Solar is the manufacturer of small turbines (1- 22 MW) with more than 1500 turbines in cogeneration applications. Solar is inquiring why GP is being developed for small turbine cogeneration applications. Market size for 1-5 MW category is very small. Majority of cogeneration are duct fired. (Leslie Witherspoon, Solar Turbines)</p>	<p>GP/GOPs are for smaller units which are not subject to NSR, NESHAP, MACT requirements. Larger units will be reviewed on a case-by-case.</p>

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3. GP /GOP Section I, Definitions	DSM Nutritional Products and Princeton University: The definition of combined heat and power combustion turbine unit should include combined cooling and power which are also highly efficient. An example is a system which uses hot water from engine exhaust and/or cooling system to operate a hot water driven absorption chiller. A possible definition is as follows: “Combined heat and power spark ignition engine unit” means a unit and indirectly to produce steam or hot water <i>for heating and cooling.</i> ” (Andrew Tynan QEP, DSM Nutritional Products; Robert Ortego. P.E., Princeton University)	The definition in both GP and GOP for the combustion turbine unit has been expanded to account for other useful output that can be derived from the unit as follows: "Combined heat and power combustion turbine unit" means a unit in which excess, or byproduct heat energy produced by combustion turbine(s), with or without duct burner(s), can be used in direct process applications or indirectly to produce steam, or other useful heat recovery not used for performance enhancement of the combustion turbine."
4. GP /GOP Section I, Definitions	Princeton University: Princeton University suggests 60 minutes is more appropriate for startup and shutdown times, consistent with our current permit. Less operational experience was gathered with these smaller units, and allowing 60 minutes for start-up and shut-down allows for that operational uncertainty. (Robert Ortego. P.E., Princeton University)	The new combustion turbines are expected to be highly efficient, and are expected to come on line within 30 minutes.
5. GP /GOP Section I, Definitions	Department Initiated Change: Clarify the Definition of "Distillate Oil"	The definition of distillate oil has been changed to "Distillate Oil" means Number 2 fuel oil or diesel.

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<p>6. GOP Section II, Part A, Applicability,</p> <p>GOP Section VI, Compliance Plan, Reference 1</p>	<p>Princeton University: The General Procedures for General Permits available at the NJDEP website do not address General Operating Permits. (Robert Ortego. P.E., Princeton University)</p>	<p>The General Procedures for General Operating Permits are also available on the NJDEP Air Quality Permitting website.</p>
<p>7. GP Section III; GOP Section II A, Applicability</p>	<p>Princeton University: Princeton University supports CHP efficiency designs that achieve 65% or greater. Princeton also concurs that CHP is BACT for reduction of CO₂ emissions. (Robert Ortego. P.E., Princeton University)</p>	<p>The Department thanks the commenters for these supporting statements.</p>
<p>8. GOP Section III, Limitations and Requirements, Paragraph 8</p>	<p>DSM Nutritional Products and Princeton University: NJDEP AQP should consider GOP as an attachment instead of merging with the Title V permit. (Andrew Tynan, QEP, DSM Nutritional Products)</p>	<p>The GOP will be rolled into the Title V permit consistent with N.J.A.C. 7:27-22.</p>

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<p>9. GP Section IV; GOP Section II B, Monitoring, Recordkeeping and Reporting</p> <p>GP Section VIII; Compliance Plan, Reference 20; GOP Section VI Compliance Plan Reference 23</p>	<p>DSM Nutritional Products and Princeton University:</p> <p>- The permitting options in Table 2 are based on different hourly fuel usage rates; assuming a heating value of 1020 BTU/scf, these correspond to units with a maximum heat input of approximately 16.5, 33, 49.5 and 65 MMBtu/hr or less (option 1 through 4). Princeton suggests that presenting the options in terms of heat input, rather than hourly fuel consumption rate, would provide more clarity.</p> <p>- Hourly fuel limits are dictated by the physical limitations of the equipment and could not be exceeded as proposed.</p> <p>(Andrew Tynan QEP, DSM Nutritional Products; Robert Ortego. P.E., Princeton University)</p>	<p>The Department agrees with the commenter that the hourly fuel limits are dictated by the physical limitations of the equipment. The monitoring has been revised by removing the requirement to monitor an hourly fuel use from GP and GOP.</p>

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<p>10. GP Section IV; GOP Section II B, Monitoring, Recordkeeping and Reporting,</p> <p>GP Section VI, GOP Section IV Equipment /Control Specifications</p>	<p>DSM Nutritional Products; Princeton University; Solar Turbines:</p> <ul style="list-style-type: none"> - Permitting options in Table 2 are based on annual NOx emissions potential as well as size, and that options corresponding to annual NOx emissions of less than 5 tons/yr should have reduced monitoring burden. - Continuous fuel monitoring is reasonable, but recording fuel use for each hour is not. - A source's maximum hourly heat input and annual fuel usage should differentiate each of the options, not the hourly fuel usage. - The general permit as drafted limits fuel usage, emissions concentrations, hourly emission rates, and annual emission rates. Limiting fuel throughput is seldom a good idea in a regulatory setting, especially when coupled with the other limitations. Solar recommends removal of fuel flow limitations. <p>(Andrew Tynan QEP, DSM Nutritional Products; Robert Ortego. P.E., Princeton University; Leslie Witherspoon, Solar Turbines)</p>	<p>The Options Table 2 in GP/GOP have been revised to show only the annual fuel use with corresponding annual emissions.</p> <p>The hourly emissions will now be calculated in the registration form based on the maximum heat input rate (HHV) chosen by the applicant.</p>

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<p>11. GP Section IV; GOP Section II B, Monitoring, Recordkeeping and Reporting,</p> <p>GP Section VIII; Compliance Plan, Reference 6 through 8 and 16 through 18;</p> <p>GOP Section VI Compliance Plan, Reference 4 through 6 and 19 through 21, 18.</p>	<p>Princeton University; DSM Nutritional Products; Solar Turbines; PPL Services Corporation:</p> <ul style="list-style-type: none"> - The use of CEMS for CHP units equipped with SCR and emitting less than 5 TPY is excessively costly and would cause the withdrawal of most proposed CHP projects. - NSPS KKKK has option to require CEMS and initial stack emission testing or allow annual stack testing. - The requirement to use CEMS, especially for lower emitting units, should be deleted. <p>(Andrew Tynan, QEP, DSM Nutritional Products, Robert Ortego. P.E., Princeton University, Leslie Witherspoon, Solar Turbines; Eddie Werkheiser, PPL Energy Services)</p>	<p>The GP/GOP has been revised to allow a choice between two monitoring methods for subsequent compliance. Either CEMS or annual stack test as per NSPS KKKK can be used along with initial stack test to comply with emission limits.</p>
<p>12. GP Section V Exclusions; GOP Section III Limitations and Requirements</p>	<p>Princeton University: Owners and operators must track their PTE to determine major source status, however the requirement to submit this demonstration with every permit modification is unnecessary, and imposes limits that are unnecessary and not required for other minor facilities.</p> <p>(Robert Ortego. P.E., Princeton University)</p>	<p>The language in Permit text is consistent with General Procedures for GP and GOP. The reason for this requirement is to assure compliance with N.J.A.C. 7-27-18 because GP/GOP procedure does not involve any Department review.</p>

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13. GP Section V Exclusions; GOP Section III Limitations and Requirements	Princeton University: Princeton requests deletion of the requirement to only burn natural gas or propane. Fuel type should not be a factor if compliance with the emission limits in Section VI may be achieved with the use of air pollution controls. (Robert Ortego, P.E., Princeton University)	Allowing fuel oils and their derivatives may result in HAPS emissions and/or diesel particulate matter emissions which would require case by case health risk considerations
14. GP Section VI, GOP Section IV Equipment /Control Specifications	Princeton University, DSM Nutritional Products Inc, PPL Services Corporation: CHP Turbine with a potential to emit less than 5 TPY should be subject to NSPS KKKK requirements and not include emissions limits based on conformance with SOTA. (Robert Ortego, P.E., Princeton University, Andrew Tynan, QEP, DSM Nutritional Products, Edward J. Werkheiser, PPL Services Corporation)	Any equipment covered by this GP/GOP shall comply with the limits listed. The owner or operator has an option of filing a permit application for a case by case evaluation of different control devices and emission limits requirements instead of obtaining a GP/GOP. No change has been done in response to this comment.

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<p>15. GP Section VI, GOP Section IV Equipment /Control Specifications, GP Section VIII; Compliance Plan, Reference 13 through 19; GOP Section VI Compliance Plan, Reference 16 through 22</p>	<p>Princeton University, DSM Nutritional Products and Solar Turbines:</p> <ul style="list-style-type: none"> - Fuel used for backup firing should have more flexible limits. Emission limits that have their basis in the Department's SOTA manual are overly stringent for sources with lower emissions potential than the 5 tons/yr limit identified in N.J.A.C. 7:27-8.12 triggering a SOTA evaluation. - Emission limits are 6 times stringent over NOx RACT. Instead of imposing limits that are considered SOTA for CHP units potentially not applicable to SOTA, "State and Federal rules sufficient in minimizing environmental impact i.e. NSPS, NOx RACT and VOC RACT" should prevail in setting emissions limits <i>especially</i> for CHP not subject to SOTA requirements." -The 25 ppm limit for NOx on back up fuel would require the use of SCR. Please allow a 65 ppmvd limit without requiring SCR. <p>(Robert Ortego. P.E., Princeton University , Andrew Tynan, QEP, DSM Nutritional Products; Leslie Witherspoon, Solar Turbines)</p>	<p>The Department has accepted Solar's suggestion to increase NOx limit from 25 ppmv to 65 ppmv during distillate oil firing, but is reducing the hours of operation to 100 hours/year consistent with the state-of-the-art manual.</p>

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<p>16. GP Section VI, GOP Section IV Equipment /Control Specifications</p> <p>GP Section VIII; Compliance Plan, Reference 22; GOP Section VI Compliance Plan Reference 25</p>	<p>Princeton University: The Department is dictating stack heights based on the height that is presumed to result in emissions of Hazardous Air Pollutants (HAP) that meet the health risk criteria determined via the Departments health risk screening tools found at http://www.state.nj.us/dep/aqpp/risk.html. (Robert Ortego. P.E., Princeton University)</p>	<p>The stack height of 35 feet for combustion turbines as determined by Department’s health risk screening tools is appropriate. Different stack heights could be evaluated on a case-by-case by applying for a regular air permit.</p>
<p>17. GP Section VII; GOP Section V, PTE Options</p>	<p>DSM Nutritional Products, Princeton University, Roche, Solar Turbines: - The NJDEP should clarify whether the annual fuel usage is based on 8260 hrs/yr. - Solar recommends removing the 75% capacity factor in the annual emissions limits. (Andrew Tynan, QEP, DSM Nutritional Products; Robert Ortego. P.E., Princeton University; James H. Connolly, Roche; Leslie Witherspoon, Solar Turbines)</p>	<p>The annual fuel use was used to calculate annual emissions that do not exceed 12.5 TPY NOx. For equipment less than or equal to 50 MMBtu/hr, annual fuel use corresponds to 8760 hours. The annual fuel use for equipment greater than 50 MMBtu/hr needs to be restricted to 75 percent capacity so that annual emissions do not increase above 12.5 tpy to ensure the GP/GOP does not trigger N.J.A.C. 7-27-18 requirements and does not increase health risk from HAPS emissions. This GP/GOP allows registering equipment up to 65 MMBTU/hr based on the annual fuel use restriction independent of operating hours.</p>

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18. GP Section VII; GOP Section V, PTE Options	<p>Solar Turbines: TSP and PM10: AP-42 level is not always a “measurable in practice” level for combustion turbines. Particulate test results that Solar has gathered from its customers range from 0.001 to 0.03 lb/MMBtu (HHV). Second, all particulate matter from combustion turbines is sub-micron. Thus in theory TSP=PM10=PM2.5. Levels in the 0.015 to 0.021 lb/ MMBtu (HHV) range for natural gas and 0.02 to 0.03 lb/MMBtu (HHV) range for liquid fuel are commonly utilized by turbine manufacturers. (Leslie Witherspoon, Solar Turbines)</p>	<p>The Department has accepted Solar’s suggestion to increase the emission factors to SOLAR recommended values as follows: TSP= PM10= 0.021 lb/ MMBtu (HHV) during natural gas firing and TSP= PM10= 0.03 lb/ MMBtu (HHV) for fuel oil firing.</p>
19. GP Section VIII; Compliance Plan, Reference 5; GOP Section VI Compliance Plan, Reference 3	<p>Princeton University: The NJDEP should extend the stack test report deadline to “60 days following the test” considering the high volume of tests conducted in this region. (Robert Ortego. P.E., Princeton University)</p>	<p>The stack test report submittal schedule is prescribed by the rule. N.J.A.C. 7:27- 22.18(e)3 requires 45 days. Subchapter N.J.A.C. 7:27- 8.3(e) requires 30 days. An extension to the stack test report submittal date in accordance with the rule may be done through a permit modification, utilizing RADIUS submittal package.</p>

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20. GP Section VIII; Compliance Plan, Reference 22; GOP Section VI Compliance Plan Reference 25	Princeton University: Do not require submittal of an EEMPR unless permit limits were exceeded, “an exceedance” occurred during the previous calendar quarter. (Robert Ortego. P.E., Princeton University)	EEMPR is required regardless of exceedance of emissions, consistent with NSPS A and N.J.A.C. 7:27-22.19 requirements. As provided in 40 CFR 60.7(c)(4), “When no excess emissions have occurred such information shall be stated in the report.”
21. GP Section VIII; Compliance Plan, Reference 33 and 39; GOP Section VI Compliance Plan Reference 36 and 42	Princeton University: NJDEP should not interchange the terms from NSPS for Excess Emissions Report with EEMPR used in New Jersey to submit CEMS data. The language in GP References 33 and 39 (GOP References 36 and 42) is not appropriate for CEM monitoring and recordkeeping results that demonstrate non conformance with NSPS limits. (Robert Ortego. P.E., Princeton University)	The purpose was to have a single report that satisfies both NJDEP and EPA except for the different report submittal frequency requirements.
22. GP Section VIII; Compliance Plan, Reference 10; GOP Section VI Compliance Plan Reference 11	PPL Services Corporation: Emission limits for TSP as an applicable requirement pursuant to N.J.A.C. 4 do not list monitoring, recordkeeping and reporting requirements. Why is MR&R requirement not included ? (Edward J. Werkheiser, PPL Services Corporation)	TSP stack emission testing is not required in this case.

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23. GP- Section VIII, Compliance Plan, Reference 5; GOP- Section VI, Compliance Plan, Reference 3	Department Initiated Change: Language for the stack test deadline should allow time for the construction of equipment.	The stack test schedule has been clarified by adding a clause for 180 days after the date of the initial operation of the equipment, as follows: “The stack test must be conducted within 180 days from the date of registration for this permit or not later than 180 days after the date of the initial operation of the equipment, whichever is later.”